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IS 9243-3 (1987): Method of test for wrist watches, Part 3: Water resistant [PGD 23: Horology]

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IS : 9243 (Part 3) - 1987

(Reaffirmed - 2012)

Indian Standard

METHODS OF TEST FOR WRIST WATCHES

PART 3 WATER-RESISTANT

(First Revision)

1. Scope — Lays down the water-resistance properties for the types of water-resistant wrist watches and specifies method of test for the verification of these properties:

a) Watches bearing the designation 'water-resistant', and

b) Watches bearing the designation 'water-resistant' with an additional indication of pressure or depth.

1.1 This standard is meant for product assurance test. Watches produced, bearing the mark 'water-resistant', shall undergo this test.

2. Definition

2.1 *Water-Resistant* — A wrist watch bearing designation 'water-resistant' is intended for ordinary daily use and is resistant to sweat, water drops, rain, etc, and to immersion in water for 30 minutes at a depth of approximately 1 m. It is not intended for use under conditions where water pressure and temperature vary significantly.

2.1.1 A wrist watch bearing designation 'water-resistant' as indicated in **1**(b) is intended for ordinarily daily use and to be resistant to water during exercises such as swimming. It may be used under conditions where water pressure and temperature vary significantly.

3. Requirements

3.1 Watches bearing the designation 'water-resistant' shall comply with the requirements specified in:

a) **3.2** and **3.4** or **3.3** and **3.4** — for watches of **1**(a) category, and

b) **3.3**, **3.4** and **3.5** — for watches of **1**(b) category.

3.2 *Resistance to Air Over Pressure* — The flow of air shall not exceed 50 μg/min, when tested by the method specified in **4.2.1**.

3.3 *Resistance to Water Over Pressure* — There shall be no condensation, when tested by the method specified in **4.2.2**.

3.4 *Resistance When Immersed in Water to a Depth of 10 cm* — There shall be no condensation, when tested by the method specified in **4.2.3**.

3.5 *Resistance to Operating Parts*

3.5.1 There shall be no condensation, when tested by the method specified in **4.2.4**.

3.6 All watches bearing the mark 'water-resistant' shall satisfy the requirements, as given below:

Requirements **3.2** and **3.3** — 100 percent of watches.

Requirements **3.4** and **3.5** — Sampling plan with inspection level 3 and acceptable quality level (AQL) 2·5 percent as given in Tables 1 and 2 of IS:2500 (Part 1)-1973 'Sampling inspection tables: Part 1 Inspection by attributes and by count of defects (*first revision*)', shall be followed.

4. Test Procedure

4.1 *Test Conditions*

4.1.1 Prior to testing, operating parts shall be made operative and set back to their normal position.

4.1.2 For the entire duration of the test, the ambient temperature shall be between 18 and 25°C and shall not vary by more than 2°C.

4.1.3 While carrying out the tests, the following sequence shall be adopted as appropriate:

a) Watches of **1**(a) category — **4.2.1** — **4.2.3** — **4.2.2**, and

b) Watches of **1**(b) category — **4.2.3** — **4.2.4** — **4.2.2**.

Horology Sectional Committee, EDC 82 [Ref: Doc: EDC 82 (4292)]

Adopted 8 April 1987

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4.2 *Operations*

4.2.1 *Resistance to air pressure* — The wrist watch shall be exposed to air at an over pressure of 2 bar inside an air chamber. The flow of air entering the watch per unit time is measured by the change in volume in the chamber with a manometer.

Note — Watches, which do not satisfy the requirements of **3.2**, shall not be subjected to any further tests.

4.2.2 *Resistance to water over pressure* — Subject the wrist watch to condensation test specified in **4.2.5**. If the watch satisfies the requirement for this test, immerse the watch in water in a suitable vessel. Apply an over pressure of 2 bar for watches bearing the designation 'water-resistant' or the specified pressure in the case of watches as indicated in **1**(b), within 1 minute and maintain the over pressure for 5 minutes. Then reduce the over pressure to the normal pressure within 1 minute. Repeat the condensation test specified in **4.2.5**.

4.2.3 *Resistance when immersed in water at a depth of 10 cm* — Subject the wrist watch to condensation test specified in **4.2.5**. If the watch satisfies the requirements for this test, immerse the watch in water at a depth of 10±2 cm for one hour. Repeat the condensation test specified in **4.2.5**.

4.2.4 *Resistance of operating parts* — Subject the wrist watch to condensation test specified in **4.2.5**. If the watch satisfies the requirements of this test, immerse the watch completely in water. Apply an external force of 5 N perpendicularly to the axis of the crown and buttons for 5 minute (*see* Fig. 1).

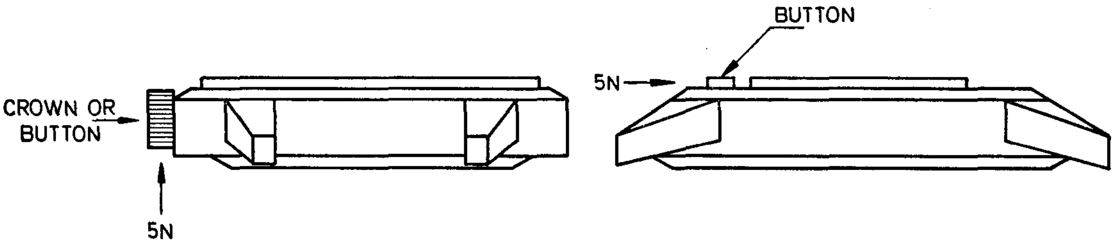

FIG. 1

4.2.5 *Condensation test* — Place the watch on a hot plate controlled at 40 to 45°C until the temperature of the watch is equal to that of the hot plate (usually, a heating time of 30 minutes is sufficient). Maintain a piece of felt or cloth of surface area 1 cm^2 with water at 18 to 25°C and place it on the glass of the watch. After about 1 minute, remove the piece of felt or cloth quickly and wipe the glass with a dry cloth. If condensation appears on the inside surface of the glass, the watch does not satisfy the requirements and shall not be subjected to any further tests.

Note — A drop of water may also be used for this test instead of the piece of felt or cloth.

5. Marking — The wrist watches, which satisfy the requirements laid down in **3**, may be marked with the term 'water-resistant' and pressure in bars or depth in metres in case of **1**(b) category watches.

EXPLANATORY NOTE

Method of test for determining the antimagnetic and shock resistant properties of watch have been covered separately.

This standard was first issued in 1979. The revision of this Indian Standard was felt necessary in order to improve the requirements for water-resistant watches. Attention is drawn to the fact that requirements are specified for two types of watch, both having designation 'water-resistant'.

While revising this standard, considerable assistance has been derived from ISO 2281-1984 'Horology — water resistant watches'; issued by the International Organization for Standardization.

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